

R. M. HOPKINS.  
KEY DEVICE.  
APPLICATION FILED JAN. 23, 1920.

1,394,833.

Patented Oct. 25, 1921.

FIG. 1

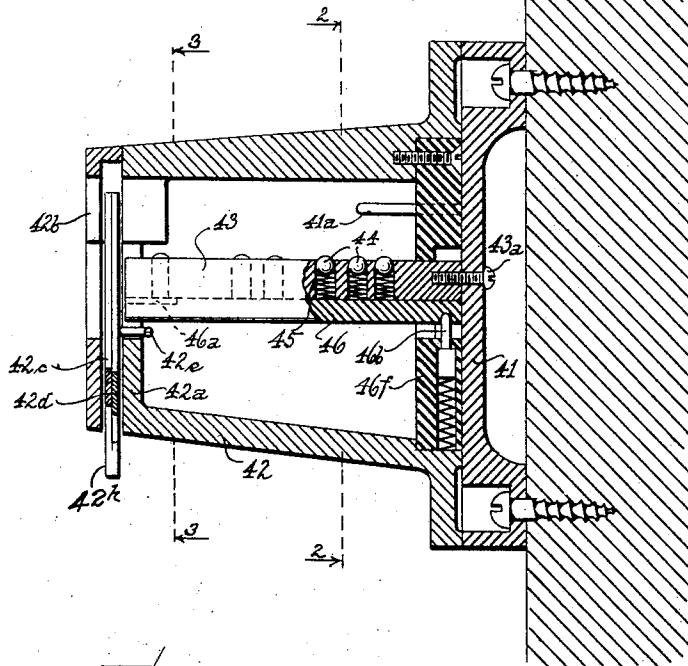


FIG. 2

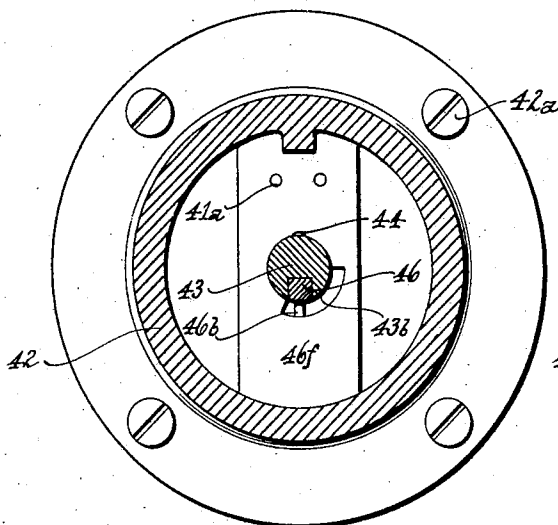


FIG. 3

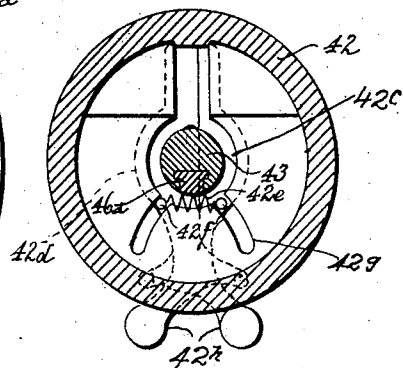


FIG. 4



FIG. 5



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# UNITED STATES PATENT OFFICE.

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## KEY DEVICE.

1,394,833.

Specification of Letters Patent.

Patented Oct. 25, 1921.

Application filed January 23, 1920. Serial No. 353,458.

*To all whom it may concern:*

Be it known that I, RICHARD M. HOPKINS, a citizen of the United States of America, and resident of Rutherford, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Key Devices, of which the following is a specification.

My invention relates to improvements in keys, or key devices, more especially to the key devices or watchmen's register conditioning devices, designed to be used in connection with the watchmen's register of the application of C. C. Johnson and myself filed June 12, 1919, Serial No. 303,593. According to the system of the said application, the watchman is provided with a portable register having registering mechanism adapted to be actuated by the watchman each time the latter reaches a station which he is supposed to visit; but the registering mechanism is normally locked and can be actuated only when the watchman has applied his register to a suitable key device or "conditioning device" or "station device", as it is variously termed, of which there is one at each station to be visited. The several key devices are preferably provided with means whereby they are differentiated one from another, and the mechanism of the register is such that actuation of the registry mechanism at one station conditions that mechanism for actuation upon application to the next key device of the series.

While the several key devices must be readily accessible, in the sense that it must be easy to apply the watchman's register thereto, yet the essential portion of the key device, or key proper, should be protected from the elements, and from accidental injury; hence it is desirable to provide a suitable case. It is still more important that this essential portion, or key proper, shall be so protected that it is extremely difficult, if not impossible, for the watchman, or other unauthorized person, to learn the actual construction of the key device, and in particular to learn the construction, size, and arrangement of those parts of the key device which, by engagement with corresponding parts of the register, effect the release of the mechanism of the latter for actuation. It is further desirable that the construction of the key device be such that,

if that device be taken apart by an unauthorized person, it shall be extremely difficult, if not impossible, to reassemble it again except by the aid of special tools which the unauthorized person is not likely to have available. In this way any attempt to learn the construction of the key device and so learn how to construct a successful imitation thereof, will be exposed.

The key device herein described is an improvement upon the device for the same purpose set forth in my application Serial No. 303,633 filed June 12, 1919, and embodies improvements in structure and arrangement.

The object of my invention is to improve and simplify key devices such as referred to.

I will now proceed to describe my invention with reference to the accompanying drawings, and will then point out the novel features in claims:

Figure 1 shows a central longitudinal section of a key device embodying my invention, secured to a suitable support.

Fig. 2 shows a transverse vertical section on the line 2—2 of Fig. 1; and Fig. 3 shows a vertical section on line 3—3 of Fig. 1, and in particular shows the shutter which normally closes the opening through which the register may be inserted.

Fig. 4 shows a perspective elevation of the tumbler retainer.

Fig. 5 shows an inverted perspective elevation of the tumbler-carrying stem.

The key device illustrated in the said drawings comprises a base 41, adapted to be secured to a wall or other support, and a shell or casing 42, together with a central stem or tumbler-carrier 43, having sockets at suitably-spaced intervals for spring-pressed ball tumblers 44. The sockets 45, in which these ball tumblers are located, are slightly closed at their outer ends, so as to prevent the escape of the ball tumblers. Behind the springs of these ball tumblers there is a retaining-bar 46, fitting loosely in a slot of the stem 43 except as to be now stated. At its front end this bar 46 has a short flanged head-portion 46<sup>a</sup> fitting within a correspondingly formed slot of the stem 43. At its rear end the retaining bar 46 is held in place normally by a spring-pressed plunger 46<sup>b</sup>. The purpose of this construction is to cause the ball-tumblers 44 and their springs to fall out and scatter in case

any attempt may be made to tamper with the key device by removing the shell 42. As shown, this shell 42 is held to the base 41 by external screws 42<sup>a</sup>, which, of course, are 5 easy to remove. Suppose these screws are removed, and the shell 42 pulled away from the base 41. The tumbler-carrying bar 43, being secured to the base 41 by a screw 43<sup>a</sup> 10 entering from the back of that base, that tumbler-carrier will remain in place when the shell 42 is removed; and as the shell 42 is pulled away the tumbler retainer 46 will also be pulled away from the stem 43, owing 15 to the engagement with this tumbler-retainer 46 of the spring-pressed plunger 46<sup>b</sup> carried by the shell 42. Since the head 46<sup>a</sup> of the tumbler-retainer is short, a short motion of the shell 42 away from the base 41 will 20 cause the front end of the tumbler retainer to disengage the dove-tail slot in the front portion of the stem 43, and to drop; and once this tumbler-retainer has dropped at its front end it is very difficult to replace it. As the shell 42 is pulled still farther away, 25 since the tumbler-retainer moves with it, the various tumbler-sockets in stem 43 are uncovered and the tumblers and balls therein fall out; and once this has occurred, it is practically impossible to replace them, since 30 the stem 43 itself cannot well be removed, since it is secured to the base 41 by a screw 43<sup>a</sup> entering that stem from the rear, this screw 43<sup>a</sup> being therefore inaccessible.

In practice some of the tumbler sockets of 35 the carrier 43 are omitted in each key device, the sockets so omitted constituting a different arrangement from those omitted in each of the other carriers 43, and each key device 40 of the series has a different combination of tumblers from all the other key devices of the system, the tumbler combination of each key device of the system corresponding to a corresponding combination of tumblers of the register.

At its front, the shell 42 is closed by an 45 end portion 42<sup>a</sup> in which is a slot 42<sup>b</sup> for the reception of certain lugs of the register. This slot therefore compels the insertion of the register into the key device in a definite 50 position. For the protection of the contents of the shell from the weather, dust, etc., a shutter is provided consisting of two leaves 42<sup>c</sup> and 42<sup>d</sup>, pivoted to the shell, guided by pins 42<sup>e</sup> working in slots 42<sup>f</sup>, and 55 normally drawn together by a spring 42<sup>g</sup>. These shutter leaves are provided with external handles 42<sup>h</sup> which the watchman may press together, so separating the shutter leaves and permitting the entry of the register 60 into the station device.

In assembling the parts of this station device, the base 41 with the stem 43 and its tumblers, tumbler-springs and tumbler-retainer 46, are secured to the intended sup-

port, and then shell 42 is set in place on said 65 base. During the securing of the base 41 to its support, the engagement of the T-head 46<sup>a</sup> of the tumbler-retainer holds that tumbler-retainer in place. In placing the shell 42, the latch-pin 46<sup>b</sup> is necessarily pressed 70 back, in order that that latch-pin may pass over the tumbler-retainer; but when the shell is in place that latch-pin engages the corresponding recess in the tumbler-retainer 46. Thereafter, no one, whether he be authorized 75 or unauthorized, can remove the shell 42 without removing as well the tumbler-retainer 46; for the latch-pin 46<sup>b</sup> is extremely inaccessible, and unless it can be retracted (and this is practically impossible after the 80 parts are assembled), the shell 42 cannot be drawn away without drawing with it the tumbler-retainer 46.

For convenience in manufacture, the latch-pin 46<sup>b</sup> is carried by a member 46<sup>c</sup>, separate 85 from shell 42 proper, but secured to it, and functionally a part of it.

While the key device herein illustrated and described is adapted to be used with the register of the Johnson and Hopkins appli- 90 cation Serial No. 303,593, above referred to, it is also adapted, and particularly intended, for use with the register of the companion application of C. C. Johnson and myself, 95 Serial No. 353,601, in which companion application this key device is also illustrated and described.

What I claim is:

1. A key device such as described comprising in combination a stem having tum- 100 bler-sockets open at both ends, tumblers and springs therefor in said sockets, and a retaining bar closing said sockets at the rear, and having a head portion fitting within a corresponding groove of the stem, whereby 105 said retaining bar may be separated from the stem by longitudinal movement of one with respect to the other.

2. A key device such as described comprising in combination a stem having tum- 110 bler-sockets open at both ends, tumblers and springs therefor in said sockets, and a retaining bar closing said sockets at the rear, and having at one end a short head portion fitting within a groove of the stem, whereby 115 a short motion of the retaining bar, with reference to the said stem, will cause disengagement of the retaining bar from the stem.

3. A key device such as described comprising a base, an inclosing shell secured to 120 said base, a tumbler-carrying stem within said shell and also secured to said base, said shell having at its front an opening for the reception of an object to pass over said stem, 125 and two pivoted spring-actuated shutter blades together forming a shutter normally closing said opening, said blades having

manually operable means to separate them to permit the passage of an object into said shell.

4. A key device such as described comprising in combination a base, a tumbler-stem secured to said base and projecting therefrom, and provided with a plurality of tumbler-pockets open at both ends, a shell surrounding and serving to protect the said stem, and a tumbler-retainer closing the rear ends of said tumbler-pockets and arranged to be separated from said stem by short longitudinal motion of the shell with respect to said stem.
5. A key device such as described comprising in combination a base, a tumbler-stem secured to said base and projecting therefrom, and provided with a plurality of tumbler-pockets open at both ends, a shell surrounding and serving to protect the said stem, and a tumbler-retainer closing the rear ends of said tumbler-pockets, and arranged to be separated from said stem by short longitudinal motion of said tumbler-retainer with reference to said stem, said shell provided with a latch engaging said tumbler-retainer

and adapted to cause the latter to be drawn forward out of engagement with the stem upon removal of the shell.

6. A key device such as described comprising in combination a base, a tumbler-stem secured to said base and projecting therefrom, and provided with a plurality of tumbler-pockets open at both ends, a shell surrounding and serving to protect the said stem, and a tumbler-retainer closing the rear ends of said tumbler-pockets, and arranged to be separated from said stem by short longitudinal motion of said tumbler-retainer with reference to said stem, said shell provided with a spring-pressed latch engaging said tumbler-retainer and adapted to cause the latter to be drawn forward out of engagement with the stem upon removal of the shell.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

RICHARD M. HOPKINS.

Witnesses:

J. L. MUSMAN,  
CATHERINE J. FLEMING.